# Location Based SMS on Battery Drainage to the caller in cellular network- An Application Overview

Akshaan Behl [#], Nadesh R.K [+]

School of Information Technology,  VIT University
Vellore (632014), Tamil Nadu, India
# P.G. Scholar, + Assistant Professor(Senior)
[#] akshaanbehl@gmail.com;rknadesh@vit.ac.in

*Abstract*—**Mobile phones have become an integral part of one's life. The mobile phone device runs out of battery and many times we see the people get troubled because of that. There are times when people are concerned about each other's well being, also, there are times when people want to meet each other but due to phone's battery they are not able to contact each other even though they might be somewhere at the same place. The application, which is developed, is going to store the mobile phone's location data and time as soon as the battery is going to drain out. Assuming, if it is set to be 7% then once the phone's battery level reaches 7%, it will store the GPS location and time of it. Now, on receiving a call, an automatic text message would be sent to the caller so as to let him know that the phone is switched off. The message would contain the last GPS location and time. This will help people from not getting worried in the event of phone unreachable.**

**Keywords:Battery,GPS,Location & Time.**

## I. INTRODUCTION

### A. Background

Mobile phones today have become an integral part of our daily lives. They are the companions we carry with us at all times. In the recent years, there has been a lot of development and advancement in these mobile phones, making them technologically more equipped as well as cheaper for the larger audience to adapt. There are many applications developed for mobile phones, which help improve our daily lives. Many of these applications can track the location of the device.

This paper aims to create an Android Application that keeps a track of the battery percentage of the user. When the battery level reduces to 7%, the user's location is stored and on the event of receiving an incoming call a corresponding SMS is sent to the incoming number with the location of the user.

The idea behind the project was that people get worried when they call someone and their phone is switched off or the battery goes down. This application is basically going to help and track the user when the battery goes down. This will help the incoming caller know the position of the user.

### B. Problem Statement

When a caller calls a person whose battery runs down and then is unable to contact that person, he or she may get worried about the user. If the incoming caller gets to know the location of the person and he/she is familiar with it, then it will provide a sense of belief to the incoming number that the user is at the right place. Also, if the incoming caller is not able to contact him/her but wants to get to the user urgently, he will be provided with the location of the user. Also, in case the phone is lost, we would like to know the location of the device, which can be found out using this.

### C. Importance

The application has the purpose of capturing the location of the mobile device and sending it as an SMS so as to make the location of the mobile device available to the incoming number and battery status. It will thus help in making sure that the phone/user is at a known location.

## II. RELATED WORKS

Scholars have extensively researched Android platform of mobile development.  Ismail Z. et al. [1] employed a system to analyse the battery saving techniques. Also specified techniques to improve the battery life with the GPS services enabled. Z.Zhuang et al. [2] improved on energy efficiency in smartphones using GPS services by suppression techniques. Yu-Chih Liao et al. [3] have tried to implement various other techniques to find out location, such as WIFI but they concluded using GPS services and maps. Sandeep K. et al.[4] showed how to implement location services into the mobile phone using GPS technology present. LBS make available personalized services based on the geographical location of the subscriber's phone [5].LBS will be of great

technological advantage in Africa optimizing operators' networks and bringing location information and services closer to the people [6], with low-cost and readily available mobile phones, underprivileged, low-income earners and rural dwellers can also participate in the Information and Communication Technology (ICT) revolution [6].

## III. DESIGN

### A. System Architecture

Figure 1 shows the architecture of the application, when the battery of the phone is almost drained. This system mainly consists of four components- User, GPS, Caller and Network.



Figure 1: System Architecture of Location SMS to Incoming Number on Battery Drainage

**User/Mobile Device**

The user of the mobile device is connected to a network. The phone keeps monitoring the battery percentage level. When the level drops to below 7 %, the service gets activated. Mobile device has inbuilt GPS for location access. When another user calls to this device, it fetches it's phone number and sends a text message to that number with the location of the mobile user. Location sent is the reverse geo-coded address. Figure 2 contains the components of the user/mobile device.
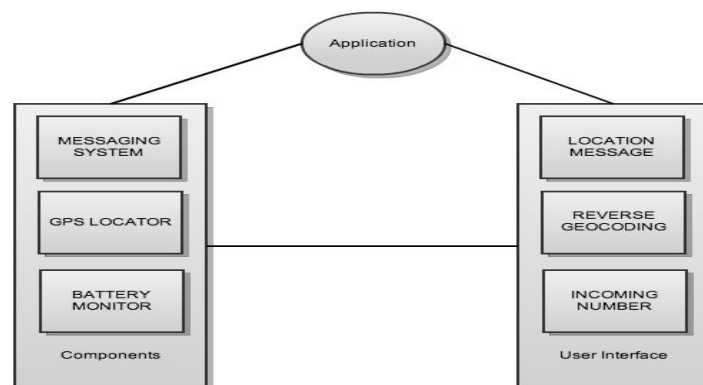


Figure 2: Components of user's device

**GPS**

Satellite providing current updates about the position of the mobile device. It returns the latitude and longitude information. When the battery of the phone is below a certain level, say 7%, the position is sent to the phone and stored in it. This is geo-coded to an address.

**Reverse Geo coding**

This activity uses the latitude and longitude received from the GPS module and finds the address of the given location. The address can be the nearest known location.

**Caller**

The person/device calling the user. At the event of low battery, the caller receives a text message with the latitude,

longitude and address of the user.

**Network**

This is used to initiate the call proceedings between the two   mobile devices. Also, for sending SMS with the location,
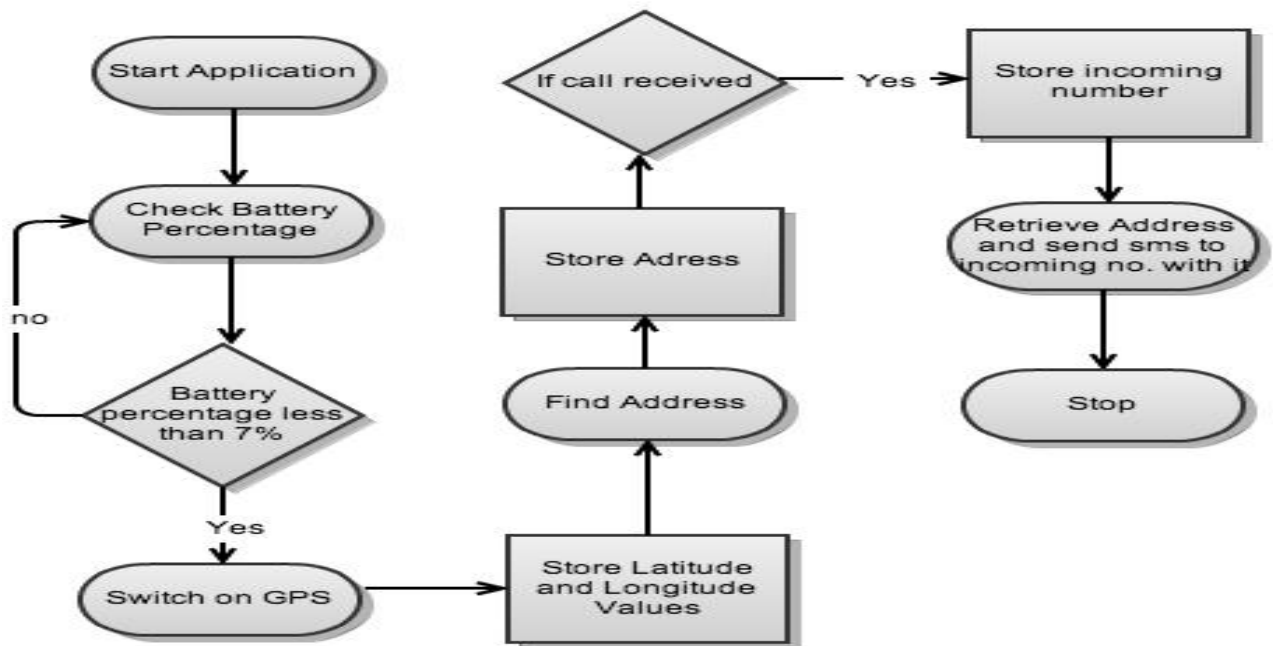
we use the network services.

B.  **Flow of data**



Figure 3: An Application Overview

The application keeps monitoring the battery percentage. Once the percentage is 7% or below, it uses GPS to fetch latitude and longitude position and stores it. Then this latitude and longitude is used to get the reverse geo-coded address. The address is also then stored. Now if a call is received, the incoming number is stored. Address is fetched from the stored values and sent in a text message to the incoming number.
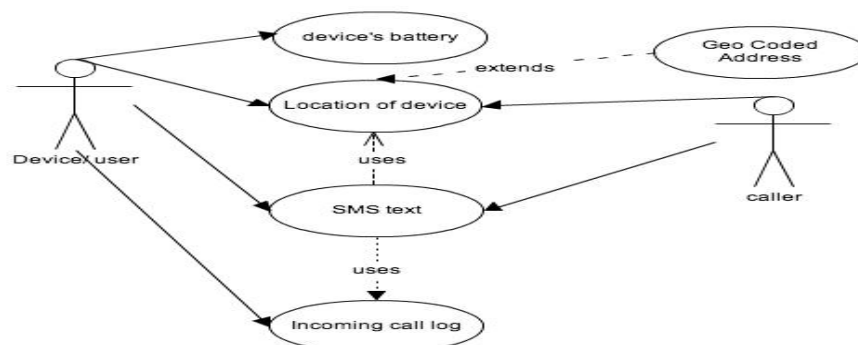
C.  **UML Diagrams**



Figure 4:  Use case Diagram for the Location SMS to Incoming  Number on Battery Drainage
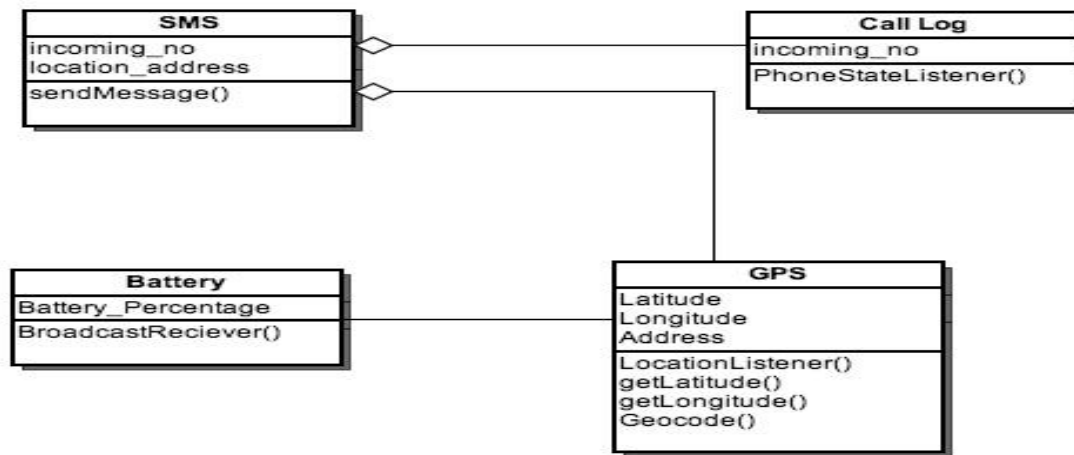
Figure 5: Class Diagram for the Location SMS to Incoming Number on Battery Drainage

IV. IMPLEMENTATION

A. *Hardware Requirements*

The hardware and software required in the mobile device for this application to function:

- Mobile Device Supporting Android platform
- Minimum RAM 256MB
- External Memory or Micro SD
- GPS
- Android OS 4.0 or higher

B. *Functionality*

The Location SMS to Incoming Number on Battery Drainage application includes a Battery Monitor activity to check the battery percentage level. When the level reaches 7% or below, the GPS is activated to get the current location. GPS returns the Latitude and Longitude position of the user. This position is converted to an address using the Reverse Geo Coding and then stored in the mobile device. If the user receives a call now from any number, it's location is automatically sent as a text message to that number, irrespective of the user picking up the phone or not.

V. DEMONSTRATION

The application is installed and run on the Samsung Galaxy Note II.



Figure 6: Screenshot Testing on Device

The above state is reached only when the battery is considerably low and the location is known of the device, Now, when a call is received, automatically an SMS is sent to the caller as shown in figure 7. The caller receives a text message with the latitude and longitude of the user as well as it's address.

Figure 7: Screenshot of the caller

## VI. CONCLUSION AND FUTURE WORK

The thought of the idea in creating such an application would be easy but it has turned out to be a challenging and time taking task. However, this application meets all the objectives and this groundwork for the application to run successfully & further can integrate activities with enhanced features. Future work on this application focus mainly of filtering, to whom the text message is to be sent instead of sending it to all the incoming numbers; this will be enhancing the privacy of the application and the user.

## Acknowledgement

## REFERENCES

[1] Muna A. Ali, Rasheed Nassr, Ismail Zahid. "Android Smartphone: Battery Saving Service"in Proc. of IEEE Research and Innovation in Information Systems (ICRIIS), 2011.

[2] Z.Zhuang, K. Kim, and J. Pal Singh. "Improving energy efficiency of location sensing on smartphones." in Proc. of ACM MobiSys'10. San Francisco, California, 2010,pp. 315-329.

[3] Yu-Chih Liao, Chen-Chia Chuang, Jin-Tsong Jeng, Jhih-Ciao Chen. "Systematic Design for the Global Positional Systems with Application in Intelligent Google Android Phone" in Proc. of International Conference on System Science and Engineering, Macau, China - June 2011.

[4] Sandeep Kumar, Mohammed Abdul Qadeer and Archana Gupta, "Location Based Services using Android (LBSOID)", in the International Conference on Internet Multimedia Services Architecture and Applications (IMSAA), pp. 1-5, 2009.

[5] R.K.Nadesh, J.JayaShree, J.Vijayashree, K.Nirupama, K.AnishFatima "Mobile Tracking Application for Locating Friends using LBS" International Journal of Engineering Science and Technology, pp.no 5066-5072; Vol 3 No.6 ,June 2011.

[6] Folasade Dahunsi," Towards the deployment and adoption of Location-based services for optimal mobile communication operations in Africa", The African Journal of Information Systems, Volume 4 , Issue 2,May 2012.